

CLAIMS

1. A biodegradable balloon adapted to exert pressure on a hole formed in a lumen in the body when placed adjacent to the hole, inside the body, and expanded, and adapted to remain in place thereafter and to be absorbed by the body.
2. A balloon according to claim 1, requiring between 1 and 2 days to be absorbed into the body, when placed on the outside of a blood vessel.
3. A balloon according to claim 1, requiring between 2 days and 1 week to be absorbed into the body, when placed on the outside of a blood vessel.
4. A balloon according to claim 1, requiring between 1 week and 2 weeks to be absorbed into the body, when placed on the outside of a blood vessel.
5. A balloon according to claim 1, requiring more than 2 weeks to be absorbed into the body, when placed on the outside of a blood vessel.
6. A balloon according to claim 1, wherein the balloon is adapted to exert enough pressure to substantially stop bleeding from the hole, when the lumen is a blood vessel.
7. A balloon according to claim 2, wherein the hole is a catheterization puncture in the blood vessel.
8. A balloon according to claim 7, wherein the blood vessel is an artery.
9. A balloon according to claim 1, wherein said balloon is inflated to a pressure of at least 1 bar.
10. A balloon according to claim 1, wherein said balloon is inflated to a pressure of at most 6 bar.

11. A balloon according to claim 1, wherein said balloon is elastically deformable when it expands.
12. A balloon according to claim 1, wherein said balloon plastically deforms when it expands.
13. A balloon according to claim 1, comprising a channel for a guide wire.
14. A balloon according to claim 1, comprising a sealing mechanism.
15. A balloon according to claim 14, wherein said sealing mechanism comprises a valve.
16. A balloon according to claim 14, wherein said sealing mechanism comprises a self-adhesive channel.
17. A balloon according to claim 14, wherein said sealing mechanism comprises a self-sealing channel.
18. A balloon according to claim 14, wherein said sealing mechanism comprises a knotted channel.
19. A balloon according to claim 1, coated on an outside surface thereof with an adhesive material.
20. A balloon according to claim 1, coated on an outside surface thereof with an anti-adhesive material.
21. A balloon according to claim 1, coated on an inside surface thereof with an anti-adhesive material.
22. A balloon system comprising a balloon according to claim 1 also comprising a biodegradable anchor element coupled to said balloon and adapted to remain in a blood vessel on adjacent said hole.

23. A system for hemostasis of a hole in a blood vessel, the system comprising:
 - a) a biodegradable balloon;
 - b) a delivery system capable of placing the balloon adjacent to the hole; and
 - c) a filling tube through which a filling material passes to expand the balloon.
24. A system according to claim 23, comprising a reservoir of biodegradable filling material.
25. A system according to claim 23, comprising a pusher adapted to separate said filling tube from said balloon.
26. A system according to claim 23, wherein said balloon is adapted to remain outside of a blood vessel while sealing said blood vessel.
27. A system according to claim 23, comprising a guide wire adapted to guide said balloon.
28. A biodegradable check valve adapted to seal an inflatable biodegradable balloon implanted inside the body.
29. A valve according to claim 28, wherein said valve is formed of a same material as said balloon.
30. A valve according to claim 28, wherein said valve is adapted to withstand a pressure of at least 1 bar of a liquid without leaking.
31. A valve according to claim 28, wherein said valve has a diameter of less than 3 mm.
32. A valve according to claim 28, wherein said valve is a leaf valve.
33. A valve according to claim 32, wherein said leaves have a thickness of less than 2% of said diameter.

34. A method of sealing an opening in a hollow structure in the body, the method comprising:

- a) positioning an uninflated biodegradable balloon outside the structure, adjacent to the opening;
- b) inflating the balloon, causing the balloon to press against the opening, at least partially sealing it;
- c) leaving the balloon in place until it degrades and is absorbed by the body;

wherein the balloon does not degrade sufficiently to stop pressing against the opening until after the opening seals.

35. A method according to claim 34, wherein positioning comprises positioning using an introducer sheath.

36. A method according to claim 34, comprises using a same sheath for positioning as for introduction of a tool into said hollow structure.

37. A method according to claim 34, wherein positioning comprises positioning using a biodegradable anchor element attached to said balloon.

38. A method according to claim 37, wherein inflating comprises engaging said hollow structure between said anchor and said balloon.

39. A method according to claim 34, wherein positioning comprises positioning using a guide wire.

40. A method according to claim 34, wherein inflating comprises inflating with a curable material.

41. A method according to claim 34, wherein inflating comprises inflating with a non-curable material.

42. A method according to claim 34, wherein inflating comprises sealing.

43. A method according to claim 34, wherein leaving comprises pushing said balloon off of a filling tube.

44. A method of manufacturing a biodegradable check valve adapted to seal an inflatable biodegradable balloon implanted inside the body, the method comprising:

- a) plating a first portion of a rod with a first portion of a biodegradable material;
- b) plating a second portion of the rod with a second portion of the biodegradable material that is thinner than the first portion of the biodegradable material;
- c) removing the plated material from the rod without tearing the plated material; and
- d) crimping the second portion of the biodegradable material, while applying sufficient heat to said second portion so that said material undergoes plastic deformation, thereby forming leaves of a leaf valve.

45. A method of implanting an inflated balloon inside the body, the method comprising:

- a) providing a balloon having a neck thereof mounted around a distal end of a filling tube;
- b) placing the balloon inside the body while the neck is around the distal end of the filling tube and a more proximal portion of the filling tube remains outside the body;
- c) inflating the balloon through the filling tube;
- d) applying a pushing force against said neck; and
- e) leaving the inflated balloon inside the body.

46. A system for hemostasis of a hole in a blood vessel, comprising:

- a) a biodegradable expandable element; and
- b) a biodegradable anchoring element attached to the expandable element;

wherein, when the expandable element is expanded and located adjacent to the hole outside the blood vessel, and the anchoring element is located adjacent to the hole inside the blood vessel, the expandable element is capable of exerting sufficient pressure on the hole to achieve hemostasis.